

## Hardware-design Project (E033702)

**Course size** *(nominal values; actual values may depend on programme)*

**Credits 6.0**

**Study time 180 h**

### Course offerings in academic year 2023-2024

A (semester 2)	English	Gent
B (semester 2)	Dutch	Gent

### Lecturers in academic year 2023-2024

Tzouvadaki, Ioulia	TW06	lecturer-in-charge
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### Offered in the following programmes in 2023-2024

	crdts	offering
Bridging Programme Master of Science in Electrical Engineering(main subject Communication and Information Technology )	6	A
Bridging Programme Master of Science in Electrical Engineering(main subject Electronic Circuits and Systems )	6	A
Master of Science in Electrical Engineering (main subject Communication and Information Technology )	6	A
Master of Science in Electrical Engineering (main subject Electronic Circuits and Systems)	6	A
Master of Science in Computer Science Engineering	6	A
Master of Science in Electrical Engineering	6	B

### Teaching languages

English, Dutch

### Keywords

hardware design of an electronic system, the components, or the communication between them, realisation, evaluation, debugging

### Position of the course

This course is aimed at the effective application, in a team context, of the design principles taught in the compulsory courses, and of the detailed knowledge acquired in the elective courses. It should enable the student to make a design in accordance with the main subject that the student has chosen and his or her choices in the core curriculum. Realisation of the design means actual hardware design, fabrication, evaluation and debugging. As the course is followed by students from the programmes Electrical Engineering (options ECS and CIT) as well as Computer Science Engineering (Embedded Systems), projects are offered out of which the respective students can make an appropriate choice. 1 project for each group of 3 to 4 students is foreseen.

### Contents

Electronic Design Project

### Initial competences

Knowledge from the core curriculum of the programme (or equivalent knowledge):

For the programme Electrical Engineering:

- Antennas and propagation
- Electromagnetically-aware high frequency design
- Design methodology for FPGAs
- VLSI technology and design (only for students ECS)
- Robotics (only for students CIT)

For the programme Computer Science Engineering:

- Electrical Circuits and Networks

- Digital Electronics
- Design methodology for FPGAs

### **Final competences**

To transform theoretical knowledge from other courses into practical applications.

### **Conditions for credit contract**

Access to this course unit via a credit contract is determined after successful competences assessment

### **Conditions for exam contract**

This course unit cannot be taken via an exam contract

### **Teaching methods**

### **Learning materials and price**

Consumables must be foreseen for the realisation and testing of the hardware: PCB software design licences, PCB manufacturing cost, components, clean room materials, probe needles, ... . Cost is strongly project dependent and is estimated to amount between 100 and 200 euro per project on average. This will be paid by the research groups.

### **References**

### **Course content-related study coaching**

### **Assessment moments**

continuous assessment

### **Examination methods in case of periodic assessment during the first examination period**

### **Examination methods in case of periodic assessment during the second examination period**

### **Examination methods in case of permanent assessment**

Assignment

### **Possibilities of retake in case of permanent assessment**

examination during the second examination period is possible in modified form

### **Extra information on the examination methods**

During semester: graded project reports; graded oral presentation. Frequency: every week.

### **Calculation of the examination mark**